Check List the journal of biodiversity data

NOTES ON GEOGRAPHIC DISTRIBUTION

Check List 19 (2): 191–197
https://doi.org/10.15560/19.2.191

PENSOFT

Bacopa egensis (Poepp.) Pennell (Plantaginaceae): new records from Northeast Brazil and the Cerrado domain

Mateus César Araújo Pestana[1*], Rafael Ferreira de Oliveira[2], André Vito Scatigna[3], Raysa Valéria Carvalho Saraiva[4], Maria Ildilene da Silva[5], Maria da Conceição de Carvalho Bastos[6], Elidio Armando Exposto Guarçoni[2,7]

1 Programa de Pós-graduação em Biodiversidade e Meio Ambiente, Universidade Federal da Grande Dourados, Dourados, MS, Brazil • MCAP: mcapestanabotanist@gmail.com https://orcid.org/0000-0001-6542-6721

2 Programa de Pós-graduação em Biodiversidade e Conservação, Universidade Federal do Maranhão, São Luís, MA, Brazil • RFO: raphaelmais12@gmail.com https://orcid.org/0000-0002-1659-2923

3 Universidade Estadual do Maranhão, Centro de Educação, Ciências Exatas e Naturais, Herbário Rosa Mochel-SLUI, São Luís, MA, Brazil • AVS: andrescatigna@gmail.com https://orcid.org/0000-0002-8874-2206

4 Universidade Federal do Maranhão, Centro de Ciências de Pinheiro, Pinheiro, MA, Brazil • RVCS: raysa.valeria@ufma.br https://orcid.org/0000-0002-0893-7338

5 Programa de Pós-graduação em Zootecnia, Universidade Federal da Grande Dourados, Dourados, MS, Brazil • MIS: ildilene.ufmach@gmail.com https://orcid.org/0000-0002-7535-6314

6 Programa de Pós-graduação em Ciências Ambientais, Universidade Federal do Maranhão, Chapadinha, MA, Brazil • MCCB: mccbastos066@gmail.com https://orcid.org/0000-0001-9237-6221

7 Universidade Federal do Maranhão, Centro de Ciências de Bacabal, Herbário BMA, Bacabal, MA, Brazil • EAEG: elidio.guarconi@ufma.br https://orcid.org/0000-0001-7939-4089

* Corresponding author

Abstract. We report the first records of *Bacopa egensis* (Poepp.) Pennell from the Brazilian Northeast and the Cerrado domain. This species was collected in the municipality of Chapadinha, in eastern Maranhão state. Photographs, a map of occurrences in Brazil, a description, and comments on the morphology and taxonomy of *B. egensis* are provided, as well as an identification key to the *Bacopa* species of Maranhão. These new records are important due to the scarcity of collections of *B. egensis* from Brazil. The new data expand the longitudinal distribution of this species in the country and are an especially important contribution to the flora of Maranhão.

Keywords. Aquatic plant, Gratioleae, Maranhão, taxonomy

Academic editor: Luana Silva Braucks Calazans

Received 7 November 2022, accepted 15 March 2023, published 20 March 2023

Pestana MCA, Oliveira RF, Scatigna AV, Saraiva RVC, Silva MI, Bastos MCC, Guarçoni EAE (2023) *Bacopa egensis* (Poepp.) Pennell (Plantaginaceae): new records from Northeast Brazil and the Cerrado domain. Check List 19 (2): 191–197. https://doi.org/10.15560/19.2.191

Introduction

Bacopa Aubl. is the largest genus in the Gratioleae of the Plantaginaceae (*sensu* APG IV 2016) with approximately 60 species. Among its representatives are the widespread Brahmi, *Bacopa monnieri* (L.) Pennell, used in the milenar Ayurveda, and *B. caroliniana* (Walter) B.L.Rob., commonly cultivated as ornamental in by aquarists. Most *Bacopa* species occur in tropical America, but several others occur in Africa, and some have an amphi-Atlantic distribution, e.g., *B. monnieri* and *B. egensis* (Poepp.) Pennell (Gonzalez-Socoloske et al. 2020).

Bacopa is characterized by the calyx usually having strongly unequal sepals, i.e., three broader sepals covering two inner and narrower ones, and by the anthers having convergent thecae, not separated by arms of the connective (Scatigna et al. 2022). However, the genus presents a wide range of morphological variation and life forms, from amphibious herbs exhibiting opposite

©The authors. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

and entire leaves (e.g., *B. caroliniana* and *B. angulata* (Benth.) Edwall), to fully aquatic species with linear or dissected leaves (e.g., *B. myriophylloides* (Benth.) Wettst. and *B. reflexa* (Benth.) Edwall) (Souza and Giulietti 2009). The androecium also varies in number of stamens, but generally there are two or four (rarely five); one remarkable exception is *B. egensis*, which usually has only three fertile stamens (rarely four) (Gonzalez-Socoloske et al. 2020).

Bacopa egensis is also exceptional in its rooted floating habit (Gonzalez-Socoloske et al. 2020), which is unique in the whole tribe. This wide morphological variation makes *Bacopa* a taxonomically complex group, with several synonyms and divergent circumscriptions depending on an author's concept (Pennell 1946; D'Arcy 1979; Souza and Giulietti 2009; Scatigna et al. 2022).

Currently, 29 species of *Bacopa*, including the recently synonymized *Conobea* Aubl. (Scatigna et al. 2022), are recorded in Brazil, eight of which are endemic to this country (Souza 2023). In the state of Maranhão, Northeast Brazil, Souza (2023) listed 13 species of *Bacopa*, with at least two species only recently recorded and cited in local floristic studies, i.e., *Bacopa angulata* and *B. cochlearia* (Huber) L.B.Sm. (Guterres et al. [2019] and Rodrigues et al. [2019], respectively), in addition to *B. aubletiana* Scatigna and *B. scoparioides* (Cham. & Schltdl.) Scatigna.

In this paper we report the new records of *Bacopa egensis* from the state of Maranhão, which represents the first records from this state and extension of its longitudinal distribution to Northeast Brazil and to the Cerrado domain. Data on morphology, taxonomy, ecology, phenology, habitat, and geographic distribution of the species are included. Finally, we provide an identification key for the species of *Bacopa* that occur in Maranhão.

Methods

We found *Bacopa egensis* during a survey on aquatic plants in the Água Branca, Centro Água Branca and Prata villages, municipality of Chapadinha, in eastern Maranhão state, Brazil. The region is encompassed by the Cerrado domain and is characterized by having vast wetlands, mainly palm swamps (veredas). The climate is marked with two well-defined seasons: rainy from January to May and dry from June to December; the average annual rainfall is 1613.2 mm (Passos et al. 2016; Pestana et al. 2022).

Botanical samples were collected and herborized according to usual techniques in plant taxonomy, as proposed by Fidalgo and Bononi (1989). We collected 20 fertile samples of *B. egensis* for our morphological analysis: 10 in Água Branca village and five in each of the other two locations. Species identification was performed through stereomicroscope analysis and by comparing specimens with available descriptions (Poeppig 1845; Souza and Giulietti 2009; Gonzalez-Socoloske et al. 2020); the name it is accordance with Souza (2023).

Description, photographs, and comments on morphology and taxonomy of *B. egensis* were made from specimens collected in Chapadinha. Collected specimens were deposited on CCAA Herbarium at Federal University of Maranhão, Chapadinha (UFMA). Duplicates were sent to the BMA Herbarium, Bacabal (UFMA) and SLUI, São Luís (UEMA) (acronyms according to Thiers 2022).

The distribution map was made in QGIS v. 3.24.2 (QGIS Development Team 2021) based on the new records and on previously recorded specimens with coordinates available online (Global Biodiversity Information Facility, New York Botanical Garden, Reflora, and SpeciesLink). Only occurrences in Brazilian territory were mapped.

Results

***Bacopa egensis* (Poepp.) Pennell**, Proc. Acad. Nat. Sci. Philadelphia 98: 96. 1946. (Poepping 1845; Pennell 1946)

Figures 1–3

New records. BRAZIL – Maranhão • Município de Chapadinha, Povoado Centro Água Branca; 03°52′53.0″S, 043°16′51.0″W; 23 m alt.; 18/XII/2021; M.C.A. Pestana 15, leg.; CCAA 2317 • Povoado Prata; 03°47′57.0″S, 043°12′05.0″W, 46 m alt.; 06/IV/2022; M.C.A. Pestana 54 & M.I. Silva, leg.; CCAA 2318 • Povoado Água Branca; 03°53′18.0″S, 43°16′26.0″W, 25 m alt.; 03/IX/2022; M.C.A. Pestana 110, R.F. Oliveira, M.C.C. Bastos & M.I. Silva, leg.; CCAA 2319 • ibid.; 03°53′28.0″S, 043°16′17.0″W, 22 m alt.; 03/IX/2022; M.C.A. Pestana 111, R.F. Oliveira, M.C.C. Bastos & M.I. Silva, leg.; CCAA 2322.

Identification. Aquatic herbs, crawling palustrine or fixed floating. **Roots** unbranched, adventitious emerging from lower axillary buds. Stems slightly quadrangular, single or with few branches, densely pilose towards apex and glabrescent towards base, entirely covered with sessile glands; internodes 2.3 mm long at apex to 70 mm long towards base. **Leaves** entire, opposite, decussate, congested at the apex into flattened floating rosettes 1.8–3 cm in diameter; leaf blades spatulate, sessile, the floating ones entire glabrous, the submerged glabrous to sparsely pilose on abaxial surface, glabrous on adaxial surface, entirely glandular-punctate, 5.25–37.3 mm long × 2.75–19.5 mm wide, venation 5-palmate, each vein terminating in a rounded tooth on the apex, teeth 7 per lamina. **Flowers** emerged, solitary, pedicels erect, aerial during anthesis, downwardly oriented, submerged when fruiting, 1–3 per node, 2.6–9.3 mm long, hispidulous; calyx with 4 (–5) subequal to strongly unequal sepals, connate at base, externally hispidulous, internally glabrous, lobes rounded, ca. 0.9 mm × 0.6 mm, margins glabrous; corolla slightly zygomorphic, trimerous (rarely tetramerous), petals connate at base, tube ca. 1.2 mm long, glabrous, lobes

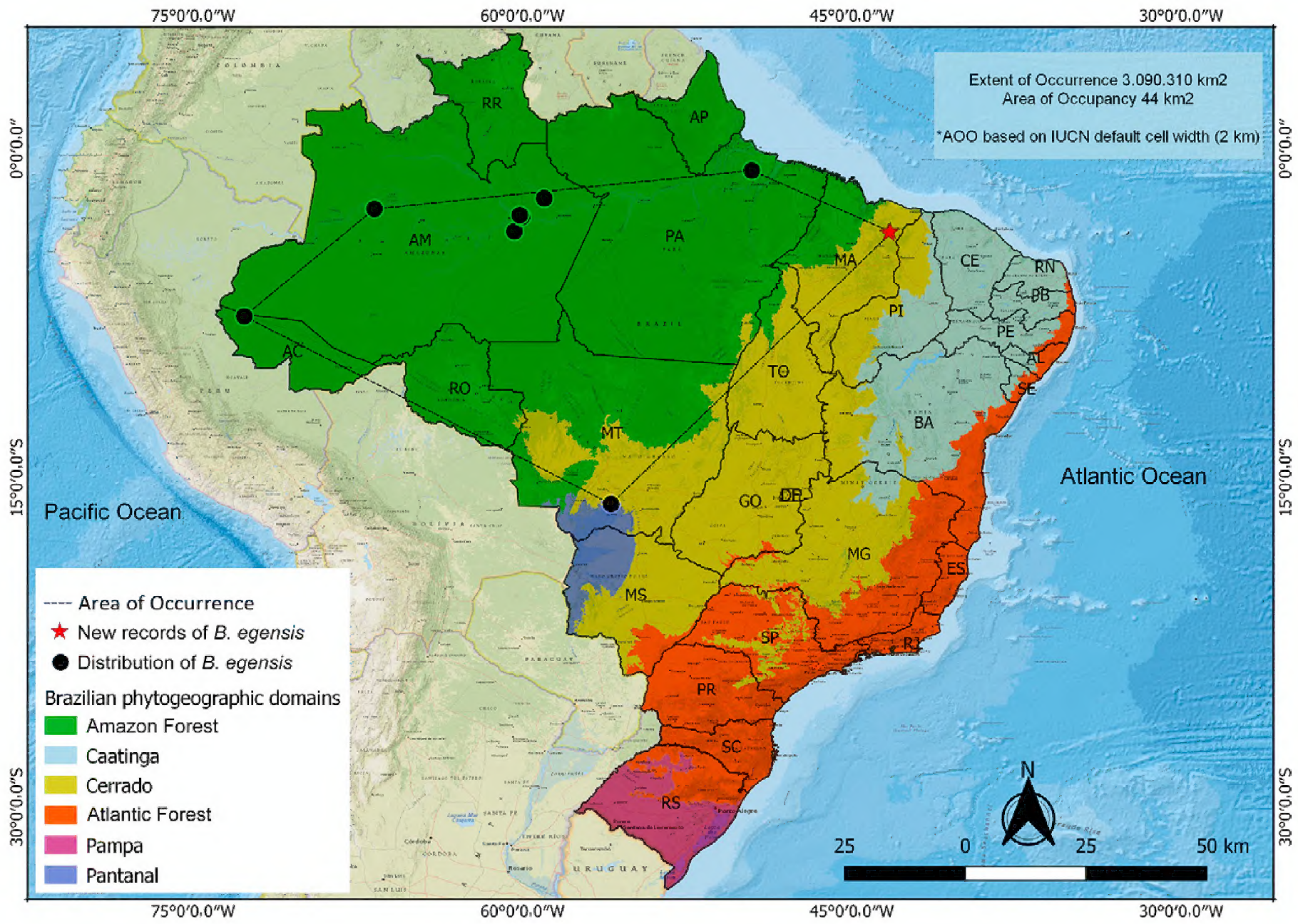

Figure 1. Map of Brazil and its phytogeographic domains (colors) showing previous records (black circles) and new records (red star) of *Bacopa egensis* in Brazil.

Figure 2. Environments of the new records of *Bacopa egensis*. **A, B.** Gallery forest. **C.** Gallery forest–natural gaps vegetation. **D.** Gallery forest–Vereda (palm swamp) vegetation. Photographs: M.C.A. Pestana and M.I. Silva.

Figure 3. *Bacopa egensis*. **A.** Floating leaf rosette. **B.** Axillary flowers. **C.** Population with palustrine habit. Photographs: M.C.A. Pestana and R.F. Oliveira.

elliptic-obovate, 2.1–2.8 mm × 1 mm, white; stamens 3 (–4), filaments glabrous 1.8–1.9 mm long, anthers 0.5–0.8 mm long, purple, sagittate, adhered to the stigma during aestivation, free at anthesis; ovary glabrous, ovoid, ca. 1 mm long × 0.7 mm wide, style glabrous, ca. 1.3 mm long, stigma biglobose, papillate. **Capsules** globose, ca. 2.2 mm in diameter, enclosed by persistent calyx. **Seeds** falcate, numerous, longitudinally ribbed, translucent, ca. 0.7 mm long × 0.1 mm wide.

Distribution and habitat. *Bacopa egensis* occurs in the Americas (Brazil, Colombia, Costa Rica, Ecuador, Honduras, Mexico, Nicaragua, Panama, Suriname, USA, and Venezuela) and Africa (Cameroon, Central African Republic, Congo, Nigeria, Senegal, and Zaire) (Gonzalez-Socoloske et al. 2020). In Brazil, it has been previously known from the states of Mato Grosso (Center-West region/Pantanal) and Acre, Amazonas, and Pará (North region/Amazonia) (Souza 2022). Here we report, for the first time, occurrences in the state of Maranhão, which also represent the first records from the Cerrado domain and the Northeast region of Brazil.

In Chapadinha municipality, *B. egensis* may be susceptible to anthropic threats, as it was not found in a conservation unit and the Cerrado in Maranhão continues to be lost due to deforestation in (INPE 2015). In our study area, the species occurs exclusively in gallery forest at the edges of ponds connected to the Munim River. These are very humid areas denominated by palm swamps (vereda) with the Buriti Palm, *Mauritia flexuosa* L.f. The soil is rich in organic matter, and the elevation is 22–46 m above sea level (lowest at Centro Água Branca village, Fig. 2A, and highest at Prata village, Fig. 2D).

Phenology and ecology. *Bacopa egensis* appears to flower mainly from December to April, during the rainiest periods (M. Pestana pers. obs.). Flowering and fruitification were observed in all our field expeditions (December 2021 and April, July, and September 2022). The species has a diurnal anthesis, opening fully around 11 am and closing around 2 pm. Although there is no published information on pollination and dispersion of *B. egensis*, the genus is known for the prevalence of entomophily (Mathur and Kumar 2001), and dispersion occurs through propagules in the water (Souza and Giulietti 2009). We observed the presence of a small, unidentified species of bug on the flower of a specimen of *B. egensis*.

The life form of *B. egensis* depends on water depth. When the soil is moist but not submerged, plants are prostrate in their growth habit, but as the water column rises, the older leaves and flowers become submerged, disintegrating after long periods of time, and only the rosette at the apex of stem floats (Fig. 3). *Bacopa egensis* was found associated with *B. salzmannii* (Benth.) Wettst. ex Edwall, *Marsilea polycarpa* Hook. & Grev. (Marsileaceae), *Nymphaea* spp. (Nymphaeaceae), *Cyperus* spp. (Cyperaceae), *Nymphoides humboldtiana* (Kunth) Kuntze (Menyanthaceae), and *Utricularia hydrocarpa* Vahl (Lentibulariaceae).

Identification key for species of *Bacopa* that occur in Maranhão
(adapted from Souza and Giulietti 2009)

1. Plants fully aquatic, then emergent, submerged or rooted floating, or palustrine then prostrate to procumbent
   2. Leaves pinnatisect; aquatic submerged; calyx with equal sepals ..... ***B. reflexa* (Benth.) Edwall**
   2. Leaves entire; palustrine or aquatic, then rooted floating or emergent; calyx with subequal to strongly unequal sepals
      3. Capsules apparent; sepals subequal ..... ***B. aubletiana* Scatigna**
      3. Capsules enclosed by the calyx; sepals strongly unequal
         4. Stamens 5, corolla actinomorphic ..... ***B. aquatica* Aubl.**
         4. Stamens 2–4, corolla zygomorphic
            5. Leaf base attenuate; calyx usually 4-lobed (rarely 5-lobed); stamens usually 3 (rarely 4), corolla usually trimerous (rarely tetramerous) ..... ***B. egensis* (Poepp.) Pennell**
            5. Leaf base round to cordate; calyx 5-lobed; stamens 2 or 4 (never 3); corolla 5-lobed
               6. Bracteoles absent
                  7. Stamens 2 ..... ***B. repens* (Sw.) Wettst.**
                  7. Stamens 4 ..... ***B. salzmannii* (Benth.) Wettst. ex Edwall**
               6. Bracteoles present
                  8. Leaves usually 1.5–2 cm long; corolla tube 0.35–0.55 cm long ..... ***B. caroliniana* (Walter) B.L.Rob.**
                  8. Leaves 0.7–1 cm long; corolla tube 0.7–1.0 cm long ..... ***B. serpyllifolia* (Benth.) Pennell**

1. Plants palustrine, erect
   9. Dorsal sepal with globose apex (thumb-like) ..... ***B. cochlearia* (Huber) L.B.Sm.**
   9. Dorsal sepal entirely plane (not thumblike)
      10. Capsules apparent; sepals subequal. ..... ***B. scoparioides* (Cham. & Schltdl.) Scatigna**
      10. Capsules enclosed by the calyx; sepals strongly unequal
         11. Pedicels during anthesis 2.5–3.3 mm long ..... ***B. gracilis* (Benth.) Edwall**
         11. Pedicels during anthesis up to ca. 2 mm long
            12. Stems winged ..... ***B. angulata* (Benth.) Edwall**
            12. Stems not winged.
               13. Flower disposed in axillary fascicles; leaf margins entire ..... ***B. monnierioides* (Cham.) B.L.Rob.**
               13. Flowers single or geminate, axillary, or disposed in terminal and axillary dense spikes; leaf margins serrulate
                  14. Flowers in terminal and axillary dense spikes; corolla lilac; aromatic ..... ***B. imbricata* (Benth.) Pennell**
                  14. Flowers single or geminate, axillary, sometimes concentrated at the apex of stems; corolla white; not aromatic ..... ***B. sessiliflora* (Benth.) Edwall**

Discussion

According to the SpeciesLink (2022) database, there are only nine records of *Bacopa egensis* from Brazil: six from the state of Amazonas and one each from Mato Grosso, Pará, and Acre; these are housed in the herbaria INPA (3 records), IAN (2), CGMS (1), MO (1), NY (1), and UEC (1). The Extent of Occurrence (EOO) of this species, based on the previous Brazilian records is 2,375,464 km^2 and the Area of Occupancy (AOO) is 32 km^2.

Based on previous and new records from Northeast Brazil, the new EOO and AOO for *B. egensis* is 3,090,310 km^2 and 44 km^2, respectively (see Supplementary File), which represents increases of 24% and 28%, respectively. The new records expanded the longitudinal distribution of *B. egensis* by roughly 770 km in a straight line from the closest previously known record in Pará state (Fig. 1).

The occurrence of *B. egensis* in eastern Maranhão is the first from the Cerrado phytogeographic domain. This species was previously known only from the Amazon domain. We found this species in a gallery forest associated with watercourses and moist soils, as noted by Ribeiro and Walter (2008); this a favorable environment for this species.

Our new occurrences are also evidence of the Cerrado–Amazon transition zone (ecotonal Cerrado), such as the Cerrado of Maranhão, which contains both Cerrado and Amazonian floristic elements (Saraiva et al. 2020). This serves to highlight the ecotonal Cerrado as a corridor for species from the Amazon to the Atlantic Forest (Oliveira-Filho and Ratter 1995; Méio et al. 2003).

The first report of *B. egensis* from Northeast Brazil, especially from Maranhão state, reflects the need for increased sampling in wetlands throughout the year, even in well-collected areas. A lack of sampling effort has no doubt prevented an adequate assessment of this species' distribution. Previous records of

this species, in addition to being scarce, are mostly from the last century, with the most recent, until now, collected in 2016.

Acknowledgements

We thank Dr. Rozijane Fernandes Ottoni (UFMA/Curator) and Vanessa Fernandes Ferreira (UFMA) for the use of the Herbarium CCAA. We thank Dr. Francisca Helena Muniz (UEMA), curator of the herbarium Rosa Mochel for the use of equipment used in our morphological analyses. We also thank the academic editor and the anonymous reviewers for taking the necessary time and effort to review the manuscript. We thank CNPq for the assistance granted (Universal process no. 402943/2021-0). AVS thanks FAPEMA (PDC-TR-00123/20) for financial support.

Author Contributions

Conceptualization: MCAP. Data curation: MCAP, MIS. Investigation: MCAP, RFO, MIS. Methodology: MCAP, RFO, AVS. Resources: MCAP, RFO, AVS, MIS, RVCS, MCCB, EAEG. Supervision: AVS, RVCS, EAEG. Visualization: MCAP, RFO. Writing – original draft: MCAP, RFO, AVS, EAEG. Writing – review and editing: MCAP, RFO, AVS, RVCS.

References

APG IV (2016) An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. Botanical Journal of the Linnean Society 181 (1): 1–20. https://doi.org/10.1111/boj.12385

D'Arcy WG (1979) Scrophulariaceae in Flora of Panama. Annals of the Missouri Botanical Garden 66 (2): 173–272.

Fidalgo O, Bononi VLR (1989) Técnicas de coleta, preservação e herborização de material botânico. Instituto de Botânica, São Paulo, Brasil, 62 pp.

Flora e Funga do Brasil (2022) Jardim Botânico do Rio de Janeiro. https://reflora.jbrj.gov.br/reflora/. Accessed on: 2022–08–30.

GBIF (Global Biodiversity Information Facility) (2020) GBIF occurrence download (28 August 2022). https://doi.org/10.15468/dl.matg3j

Gonzalez-Socoloske D, Tippery NP, Carmen Jiménez Pérez N, Les DH (2020) New record of *Bacopa egensis* (Plantaginaceae) for the flora of Mexico. Journal of the Botanical Research Institute of Texas 14 (2): 395–403. https://doi.org/10.17348/jbrit.v14.i2.1017

Guterres AVF, Amorim IFF, Silva AFC, Almeida Jr ED (2019) Flora do estrato herbáceo da restinga da praia do Caúra, São José de Ribamar, Maranhão. Boletim do Laboratório de Hidrobiologia 29 (2): 1–10. https://doi.org/10.18764/1981-6421e2019.8

INPE (Instituto Nacional de Pesquisas Espaciais) (2015) Projeto TerraClass Cerrado: mapeamento do uso e cobertura da terra no Cerrado. http://www.dpi.inpe.br/tccerrado/index.php?mais=1. Accessed on: 2023–02–01.

Mathur S, Kumar S (2001) Reproductive biology of *Bacopa monnieri*. Journal of Genetics and Breeding 55 (2): 101–109.

Méio BB, Freitas CV, Jatobá L, Silva ME, Ribeiro JF, Henriques RP (2003) The influence of Amazonian and Atlantic flora in the vegetation of cerrado *sensu stricto*. Brazilian Journal of Botany 26: 437–444. https://doi.org/10.1590/S0100-84042003000400002

Oliveira-Filho AT, Ratter JÁ (1995) A study of the origin of central Brazilian forests by the analysis of plant species distribution patterns. Edinburgh Journal of Botany 52: 141–194.

Passos MLV, Zambrzycki GC, Pereira RS (2016) Balanço hídrico e classificação climática para uma determinada região de Chapadinha - MA. Revista Brasileira de Agricultura Irrigada 10 (4): 758–766. https://doi.org/10.7127/rbai.v10n400402

Pennell FW (1946) Reconsideration of the *Bacopa–Herpestis* problem of the Scrophulariaceae. Proceedings of the Academy of Natural Sciences of Philadelphia 98: 83–98.

Pestana MCA, Mendonça NA, Oliveira RF, Bastos MCC, Silva MI, Barroso AM, Hora RC, Guarçoni EAE (2022) First records of *Utricularia breviscapa* C. Wright ex Griseb. (Lentibulariaceae) for Maranhão state, northeastern Brazil. Check List 18 (4): 861–866. https://doi.org/10.15560/18.4.861

Poepping E (1845) Nova genera ac Species Plantarum. Friderici Hofmeister, Lipsiae, Germany, 300 pp.

QGIS Development Team (2021) QGIS Geographic Information System. Open-Source Geospatial Foundation Project. http://qgis.osgeo.org. Accessed on: 2022–08–31.

Reflora - Herbário Virtual (2022) http://floradobrasil.jbrj.gov.br/reflora/herbarioVirtual/. Accessed on: 2022-09-08.

Ribeiro JF, Walter BMT (2008) As principais fitofisionomias do bioma Cerrado. In: Sano SM, Almeida SP, Ribeiro JF (Eds.) Cerrado: ecologia e flora. Embrapa Informação Tecnológica, Brasília, Brazil, 151–212.

Rodrigues ML, Mota NFDO, Viana PL, Koch AK, Secco RDS (2019) Vascular flora of Lençóis Maranhenses National Park, Maranhão state, Brazil: checklist, floristic affinities and phytophysiognomies of restingas in the municipality of Barreirinhas. Acta Botanica Brasilica 33: 498–516. https://doi.org/10.1590/0102-33062018abb0421

Saraiva RVC, Leonel LV, Reis FF, Figueiredo FAMMA, Reis FO, Souza JRP, Muniz FH, Ferraz TM (2020) Cerrado physiognomies in Chapada das Mesas National Park (Maranhão, Brazil) revealed by patterns of floristic similarity and relationships in a transition zone. Anais da Academia Brasileira de Ciências 92 (2): 1–16. https://doi.org/10.1590/0001-3765202020181109

Scatigna AV, Souza VC, Sosa MLM, Colleta DG, Machado MR, Simões AO (2022) Phylogenetics of Gratioleae (Plantaginaceae): paraphyly of *Stemodia* and its implications for generic circumscriptions, with insights from floral evolution. Botanical Journal of the Linnean Society 200 (2): 194–217. https://doi.org/10.1093/botlinnean/boac013

Souza VC, Giulietti AM (2009) Levantamento das espécies de Scrophulariaceae *sensu lato* nativas do Brasil. Pesquisas, Botânica 60: 7–288.

Souza, VC (2023) Bacopa in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. https://floradobrasil.jbrj.gov.br/FB86692. Accessed on: 2023–02–07.

SpeciesLink (2022) http://www.splink.org.br. Accessed on: 2022–08–31.

Thiers B (2022) http://sweetgum.nybg.rg/science/ih. New York Botanical Garden's Virtual Herbarium. Accessed on: 2022-08-31.

Supplementary File

GeoCAT file of EOO and AOO of *Bacopa egensis*. Previous and new records in Brazilian territory. https://checklist.pensoft.net/getfile.php?file_id=825676